

CLAIMS

Claim 1 A hopper car unloading apparatus for transporting materials discharged through hoppers on a rail hopper car, the car having a first end wheel set and a second end wheel set, the wheel sets being positionable on fixed tracks adjacent the apparatus, the

5 apparatus comprising:

a movable track member, the track member being movable from and to an aligned position wherein the track member is aligned with the fixed tracks such that the car wheel sets are rollable over the track member; and

10 a receiving deck having a head portion, the receiving deck being movable to and from a receiving position beneath the car for receiving the materials discharged through the hoppers, the receiving deck transporting such received materials from beneath the car for discharge at the head portion, the track member being out of its aligned position when the receiving deck is in the receiving position.

Claim 2 A hopper car unloading apparatus for transporting materials discharged through

15 hoppers on a rail hopper car, the car having a first end wheel set and a second end wheel set, the wheel sets being positionable on fixed tracks adjacent the apparatus, the apparatus comprising:

20 a track member, the track member being between the first end and second end wheel sets, the track member being movable from a first position in which the track member is substantially aligned with the fixed tracks such that the car wheel sets can roll onto the track member from the fixed tracks, to a second position, such that the track member is substantially out from under the hoppers; and

25 a receiving deck, the receiving deck having a head portion, the receiving deck being movable from a first position to a second position, wherein at least part of the receiving deck is beneath at least one hopper along substantially the entire at least one hopper length, the receiving deck and the track member cooperating for coordinated movement between the first and second positions of each;

such that, when the track member is in the second position and materials are discharged through the at least one hopper above the receiving deck, the materials are transported by 30 the receiving deck for discharge at the receiving deck head portion.

Claim 3 The apparatus of Claim 2, wherein the receiving deck further comprises at least two conveyor sections.

Claim 4 The apparatus of Claim 2, wherein the track member further comprises at least two sections, and the receiving deck further comprises at least two sections, each track

member section cooperating with a receiving deck section, for coordinated movement between the first and second positions of each, the movement being optionally independent of movement by other track member sections and other receiving deck sections.

5 Claim 5 The apparatus of claim 4, wherein each receiving deck section further comprises at least two conveyor sections.

Claim 6 The apparatus of Claim 2, further comprising a takeaway conveyor, the takeaway conveyor being positioned to receive materials discharged at the receiving deck head portion.

10 Claim 7 The apparatus of claim 6, further comprising a second like apparatus positioned for receiving discharged materials from a second rail hopper car's hoppers, the takeaway conveyor for each apparatus discharging received materials onto a common conveyor.

Claim 8 The apparatus of Claim 2, further comprising electronic control of the coordinated movement of the track member and the receiving deck.

15 Claim 9 The apparatus of claim 8, further comprising an operator control station from which an operator operates the electronic control of the coordinated movement of the track member and the receiving deck.

Claim 10 The apparatus of Claim 2, wherein, while the receiving deck is in the second position, the at least one hopper above the receiving deck is a paired hopper, and at least 20 part of the receiving deck is beneath substantially the entire combined length of the paired hoppers.

Claim 11 The apparatus of Claim 2, wherein the track member has a first rail and a second rail, each rail for receiving the car wheel sets, the first rail and second rail being moved closer together when the track member is moved from the first position.

25 Claim 12 A hopper car unloading apparatus for transporting materials discharged through hoppers on a rail hopper car, the car having a first end wheel set and a second end wheel set, the wheel sets being positionable on fixed tracks adjacent the apparatus, the apparatus comprising:

a movable track member;

30 means for moving the track member from and to an aligned position wherein the track member is aligned with the fixed tracks such that the car wheel sets are rollable over the track member;

a receiving deck having a head portion; and

means for moving the receiving deck to and from a receiving position beneath the car for receiving the materials discharged through the hoppers, the receiving deck transporting such received materials from beneath the car for discharge at the head portion, the track member being out of its aligned position when the receiving deck is in the receiving

5 position.

Claim 13 A hopper car unloading apparatus for transporting materials discharged through hoppers on a rail hopper car, the car having a first end wheel set and a second end wheel set, the wheel sets being positionable on fixed tracks adjacent the apparatus, the apparatus comprising:

10 a track member, the track member being between the first end and second end wheel sets;

means for moving the track member a first position in which the track member is substantially aligned with the fixed tracks such that the car wheel sets can roll onto the track member from the fixed tracks, to a second position such that the track member is substantially out from under the hoppers;

15 a receiving deck, the receiving deck having a head portion; and

means for moving the receiving deck from a first position to a second position wherein at least part of the receiving deck is beneath at least one hopper along substantially the entire at least one hopper length, the means for moving the receiving deck and the means

20 for moving the track member cooperating for coordinated movement of the receiving deck and the track member between the first and second positions of each; such that when the track member is in the second position and materials are discharged through the at least one hopper above the receiving deck, the materials are transported by the receiving deck for discharge at the receiving deck head portion.

25 Claim 14 The apparatus of claim 13, wherein the means for moving the receiving deck is a direct linkage of the receiving deck to the track member.

Claim 15 A method for transporting materials discharged through hoppers on a rail hopper car, the car having a first end wheel set and a second end wheel set, the wheel sets being positionable on fixed tracks adjacent the apparatus, the method comprising the

30 steps of:

positioning the car on the fixed tracks while the track member is in an aligned position wherein it is aligned with the fixed tracks, such that the car wheel sets are rollable over the track member, the car wheels utilizing the track member for such positioning;

moving the track member to a non-aligned position;

moving a receiving deck, having a head portion, to a receiving position beneath the car; receiving materials discharged through the at least one hopper onto the receiving deck; transporting the discharged materials on the receiving deck for discharge at the receiving deck head portion;

5 removing the receiving deck from its receiving position;
returning the track member to its aligned position; and
moving the hopper car from above the track member, the hopper car wheels utilizing the track member during such movement.

Claim 16 The method of claim 15, wherein a second car is coupled to the unloaded car,
10 the method further comprising repeating the steps of claim 15 for the second car, the step of positioning the car on the fixed tracks occurring as the first car was removed from above the track member.

Claim 17 The method of claim 15, further comprising the step of receiving the discharged materials from the receiving deck onto a takeaway conveyor.

15 Claim 18 A method for transporting materials discharged through hoppers on a rail hopper car, the car having a first end wheel set and a second end wheel set, the wheel sets being positionable on fixed tracks adjacent the apparatus, the method comprising the steps of:

positioning the car on the fixed tracks such that the car hoppers are above a track
20 member, the track member being movable from first position under the hoppers to a second position substantially out from under the hoppers, the car wheels utilizing the track member for such positioning;

moving the track member to the second position;

25 moving a receiving deck, having a head portion, from a first position wherein the receiving deck is substantially out from under the hoppers, to a second position wherein at least part of the receiving deck is beneath at least one hopper along substantially the entire hopper length;

receiving materials discharged through the at least one hopper onto the receiving deck;
transporting the discharged materials on the receiving deck for discharge at the receiving
30 deck head portion;

returning the receiving deck to its first position;

returning the track member to the first position; and

moving the hopper car from above the track member, the hopper car wheels utilizing the track member during such movement.

Claim 19 The method of claim 18, wherein a second car is coupled to the unloaded car, the method further comprising repeating the steps of claim 18 for the second car, the step of positioning the car on the fixed tracks occurring as the first car was removed from above the track member.

5 Claim 20 The method of claim 18, further comprising the step of receiving the discharged materials from the receiving deck onto a takeaway conveyor.